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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,721	10/25/2003	Amalavoyal Narasimha Chari	TROPOS-1006-CON	5348

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EXAMINER	
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2617	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/693,721	CHARI ET AL.	
	Examiner	Art Unit	
	Olumide T. Ajibade-Akonai	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-79* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-44,47,48,53-67 and 71-76* is/are rejected.

7)☒ Claim(s) *45,46,49-52,68-70 and 77-79* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 10/25/05 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 40-44, 47, 48, 53, 64, and 65 are rejected under 35 U.S.C. 102(a) as being anticipated by **Hummel WO 00/07333**.

Regarding **claim 40** Hummel discloses a method of wireless connectivity comprising: receiving a broadcast beacon (data packet containing routing statement R1, IP address IP, and user data area ND, see fig. 1, page 9, lines 25-34, page 10, lines 1-5, page 12, lines 25-35, page 13, lines 1-14) at a client (transit network nodes TK1-TK5, see fig. 2, page 11, lines 6-19); the client deriving information from the beacon (retrieving IP address and route branch from the identification information record K1, see page 12, lines 25-35, page 13, lines 1-26, page 14, lines 6-31), the information allowing the client to identify all other clients in a multi-hop path from the client to a server (retrieving IP address and route branch from the identification information record K1, so that the transit network nodes TK1-TK5 know all the other transit nodes from the source network node UK to destination network nodes Z1, Z4 and destination terminals Z2, Z3, see page 11, lines 6-19, page 12, lines 25-35, page 13, lines 1-26, page 14, lines 6-31).

Regarding **claim 41**, as applied to claim 40, Hummel further discloses wherein the information identifying the other clients comprises addresses of the other clients (see page 11, lines 21-34).

Regarding **claim 42**, as applied to claim 40, Hummel further discloses wherein beacons are originated and broadcast by the server (see page 12, lines 9-23), and are modified and broadcast by clients (see page 14, lines 19-31).

Regarding **claim 43**, as applied to claim 40, Hummel further discloses wherein the client receives a plurality of broadcast beacons, modifies at least one of the received beacons, and transmits the at least one modified beacon (see page 14, lines 19-31).

Regarding **claim 44**, as applied to claim 42, Hummel further discloses wherein modified beacons comprise addresses of clients in the path, and an address of the server (see page 11, lines 21-34, page 12, lines 9-23).

Regarding **claim 47**, as applied to claim 40, Hummel further discloses each client that receives the broadcast beacon rebroadcasting the beacon with an identifier of the client added to the beacon; such that any client receiving any beacon has a complete path to the server (see page 14, lines 19-31).

Regarding **claim 48**, as applied to claim 47, Hummel further discloses wherein the identifier of the client is a client address (see page 14, lines 19-31).

Regarding **claim 53**, as applied to claim 44, Hummel further discloses determining if there is a previous gateway identified; and deleting the previous default gateway from memory (see page 12, lines 31-35, page 13, lines 1-7).

Regarding **claim 64**, Hummel discloses a server (source network node UK, see fig. 2, page 11, lines 6-19) for wireless communications comprising: a beacon logic to generate a beacon (data packet containing routing statement R1, IP address IP, and user data area ND, see fig. 1, page 9, lines 25-34, page 10, lines 1-5, page 12, lines 25-35, page 13, lines 1-14) and broadcast the beacon (source network node UK creating an identification record K1 and transmitting the record K1 to transit network node TK1, reading on beacon logic to generate and broadcast a beacon signal, see fig. 2, see page 12, lines 25-35, page 13, lines 1-26); and a wireless transceiver to receive a plurality of reverse beacons (TK1 receiving K1 from UK, see fig. 2, page 12, lines 25-35, page 13, lines 1-3), the reverse beacons including information identifying all other clients (transit network nodes TK1-TK5, destination network nodes and terminals Z1-Z4, see fig. 2, see page 11, lines 6-19) in a multi-hop path to each of the clients (data packet containing routing statement R1, IP address IP, and user data area ND, see fig. 1, col. 6, lines 51-65, see col. 8, lines 33-53); and a client tree storing information identifying other clients in the path to each of the clients (creating a routing statement R1 based on destination nodes, transit network nodes indicates UK has memory/storage capability that has a record of all the nodes, see col. 7, lines 37-51), such that the server can send data to any client, either directly or through other clients on the network (determining routing path using a routing algorithm, see col. 7, lines 46-51).

Regarding **claim 65**, as applied to claim 64, Hummel further discloses monitoring logic to monitor a network, the monitoring logic using the client tree to generate a map of the network of clients (see page 12, lines 9-35, page 13, lines 1-7).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 63, 66, 67, 75, and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hummel WO 00/07333** in view of **Garcia-Luna-Aceves et al 7,002,949 (hereinafter Garcia)**.

Regarding **claim 63**, as applied to claim 40, Hummel discloses the claimed Invention. Hummel further discloses constructing a client tree in the server, wherein the server has a path to all clients (see page 12, lines 9-35, page 13, lines 1-7). Hummel does not disclose sending a reverse beacon to the server. In an analogous art, Garcia discloses sending a reverse beacon to the server (transmitting routing update messages to neighbors in an ad hoc network consisting of a plurality of nodes, see fig. 1, col. 6, lines 2-6).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Garcia, by exchanging routing information between all nodes in an ad hoc network, into the system of Hummel, for the benefit of providing an efficient routing protocol in a wireless ad hoc network.

Regarding **claim 66**, Hummel discloses a method of generating a routing path for a system including a server (source network node UK, see fig. 2, page 11, lines 6-19) and a plurality of clients (transit network nodes TK1-TK5, destination network nodes and terminals Z1-Z4, see fig. 2, page 11, lines 6-19), the method comprising each client: receiving a beacon (data packet containing routing statement R1, IP address IP, and user data area ND, see fig. 1, page 9, lines 25-34, page 10, lines 1-5, page 12, lines 25-35, page 13, lines 1-14) from the server (TK1 receiving K1 from UK, see fig. 2, page 12, lines 25-35, page 13, lines 1-3); the client deriving information from the beacon, the

information allowing the client to identify all other clients in a multi-hop path from the client to a server (retrieving IP address and route branch from the identification information record K1, so that the transit network nodes TK1-TK5 know all the other transit nodes from the source network node UK to destination network nodes Z1, Z4 and destination terminals Z2, Z3, see page 11, lines 6-19, page 12, lines 25-35, page 13, lines 1-26, page 14, lines 6-31); rebroadcasting one beacon received from an upstream node (broadcasting the transmitted packets from TK1 to the other transit network nodes, see page 14, lines 6-31).

Hummel does not disclose broadcasting a reverse beacon upstream, the reverse beacon being addressed to a known upstream node, the reverse beacon used by the server and a client to set up a routing table.

In an analogous art, Garcia discloses broadcasting a reverse beacon upstream (transmitting routing update messages to neighbors in an ad hoc network, see col. 6, lines 2-6), the reverse beacon being addressed to a known upstream node (transmitting routing update messages to neighbors in an ad hoc network consisting of a plurality of nodes, see fig. 1, col. 6, lines 2-6), the reverse beacon used by the server (see fig. 1) and a client (see fig. 1) to set up a routing table (transmitting routing update messages to neighbors in an ad hoc network consisting of a plurality of nodes, and the routing table of the nodes are updated based on the routing information that is exchanged between the nodes, see fig. 1, col. 6, lines 1-6, 25-47).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Garcia, by exchanging

routing information between all nodes in an ad hoc network, into the system of Hummel, for the benefit of providing an efficient routing protocol in a wireless ad hoc network.

Regarding **claim 67**, as applied to claim 66, Hummel further discloses wherein a routing table in a particular client includes a default gateway and a path to each client downstream from the particular client (data packet containing routing statement R1, IP address IP, and user data area ND, see fig. 1, page 9, lines 25-34, page 10, lines 1-5, page 12, lines 25-35, page 13, lines 1-14).

Regarding **claim 75**, as applied to claim 66, Hummel further discloses wherein a connection between the server and the client is a wireless connection (see page 9, lines 26-34).

Regarding **claim 76**, as applied to claim 66, Hummel further discloses wherein a connection between the server and the client is chosen from among the following types of connections: a wireless connection, a wired connection, and a switched connection (see fig. 2, page 21, claim 19).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims **54-62**, and **71-74** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 54 recites the limitation "collecting all beacons" in line 2. There is insufficient antecedent basis for this limitation in the claim (see claim 40). Claim 40

recites the limitation "receiving a broadcast signal at a client". Claims 55-62 are rejected based on their dependence on claim 54.

Claim 71 recites the limitation "the default gateway" in line 4. There is insufficient antecedent basis for this limitation in the claim (see claim 66). Claims 72-74 are rejected based on their dependence on claim 71.

Allowable Subject Matter

8. Claims 45, 46, 49-52, 68-70, and 77-79 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Elliott 6,456,599 discloses distribution of potential neighbor information through an ad hoc network.

Cansever 6,678,252 discloses a method and apparatus for dynamic source routing in ad hoc wireless networks.

Coan et al 5,093,824 discloses distributed protocol for improving the survivability of telecommunications trunk networks.

Ciotti, Jr. et al 6,421,731 discloses dynamic next hop routing protocol.

van Valkenburg et al 6,775,258 6,775,258 discloses an apparatus, and associated method, for routing packet data in an ad hoc, wireless communication system.

Kato et al 6,646,999 discloses mobile packet communication system.

Perkins 5,412,654 discloses highly dynamic destination-sequenced destination vector routing for mobile computers.

Bahl et al 6,990,080 discloses distributed topology control for wireless multi-hop sensor networks.

Chen 6,567,380 discloses a technique for selective routing updates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olumide T. Ajibade-Akonai whose telephone number is 571-272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rafael Perez-Gutierrez can be reached on 571-272-7915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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